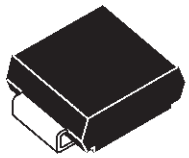
# STPS160A/U

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

| | |
|---|---|
| $I_{F(AV)}$ | 1 A |
| $V_{RRM}$ | 60 V |
| $V_F$ (max) | 0.57 V |

SMA
STPS160A



SMB
STPS160U

### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNTED DEVICE

### DESCRIPTION

Single chip Schottky rectifier suited for Switch-mode Power Supplies and high frequency DC to DC converters.

Packaged in SMA or SMB(*), this device is intended for surface mounting and used in low voltage, high frequency inverters, free wheeling and polarity protection applications.

(*) in accordance with JEDEC DO214AC and DO214AA standard

### ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | 60 | V |
| $I_{F(RMS)}$ | RMS forward current | | 10 | A |
| $I_{F(AV)}$ | Average forward current | $T_{Lead}$ = 130°C<br>$\delta$ = 0.5 | 1 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp = 10 ms<br>Sinusoidal | 75 | A |
| $I_{RRM}$ | Repetitive peak reverse current | tp = 2 µs<br>F = 1kHz | 1 | A |
| $I_{RSM}$ | Non repetitive peak reverse current | tp = 100µs square | 1 | A |
| $T_{stg}$ | Storage temperature range | | - 65 to + 150 | °C |
| Tj | Maximum junction temperature | | 150 | |
| dV/dt | Critical rate of rise of reverse voltage | | 10000 | V/µs |

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th\ (j-l)}$ | Junction to lead | SMA | 30 | °C/W |
| | | SMB | 23 | |

## STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Tests Conditions | Tests Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ * | Reverse leakage current | Tj = 25°C | $V_R$ = 60V | | | 4 | µA |
| | | Tj = 125°C | | | 1.1 | 4 | mA |
| $V_F$ ** | Forward voltage drop | Tj = 25°C | $I_F$ = 1 A | | | 0.67 | V |
| | | Tj = 125°C | $I_F$ = 1 A | | 0.49 | 0.57 | |
| | | Tj = 25°C | $I_F$ = 2 A | | | 0.8 | |
| | | Tj = 125°C | $I_F$ = 2 A | | 0.58 | 0.65 | |

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.49 \times I_{F(AV)} + 0.08 \times I_F{}^2{}_{(RMS)}$

**Fig. 1:** Average forward power dissipation versus average forward current.

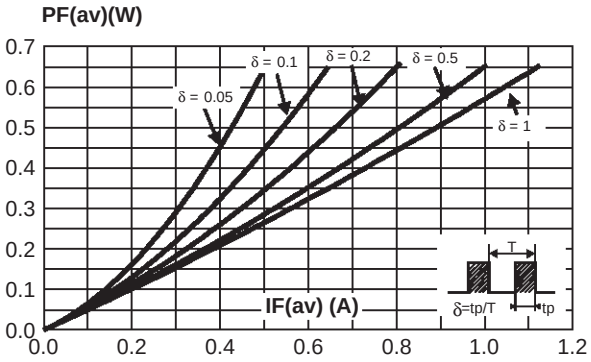



**Fig. 2:** Average forward current versus ambient temperature (δ=0.5).

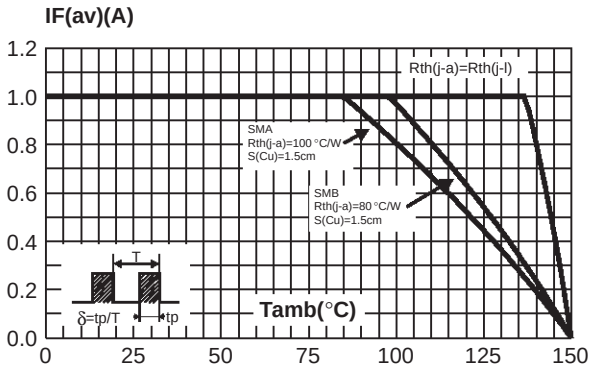


**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

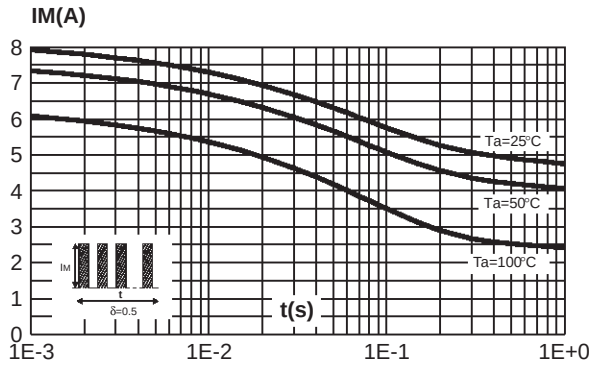



**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).

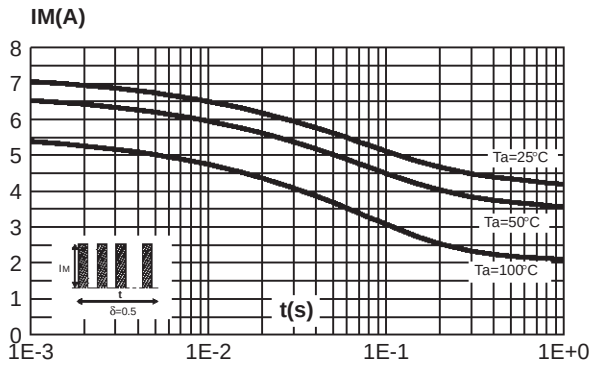



**Fig. 4-1:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

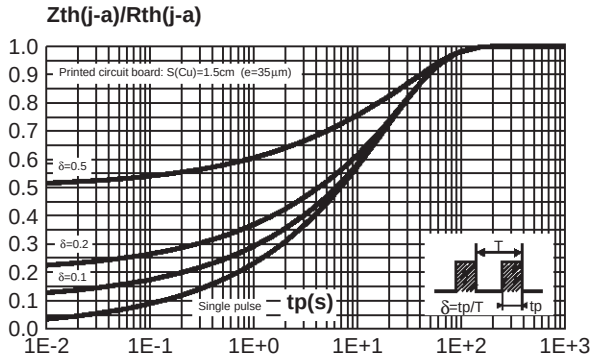



**Fig. 4-2:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).

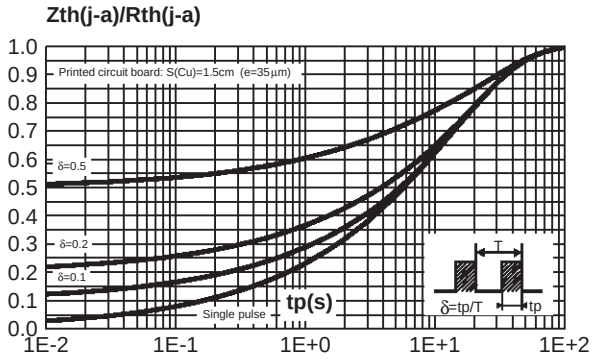



**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).

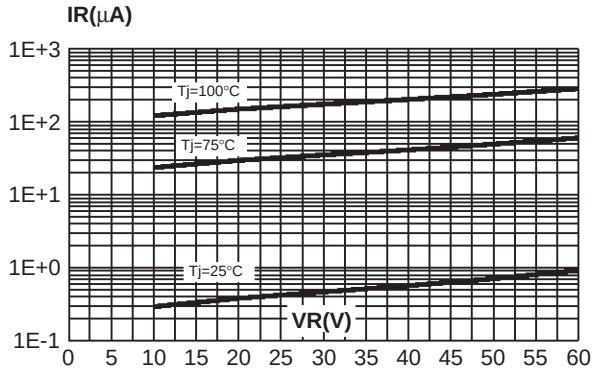



**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values)

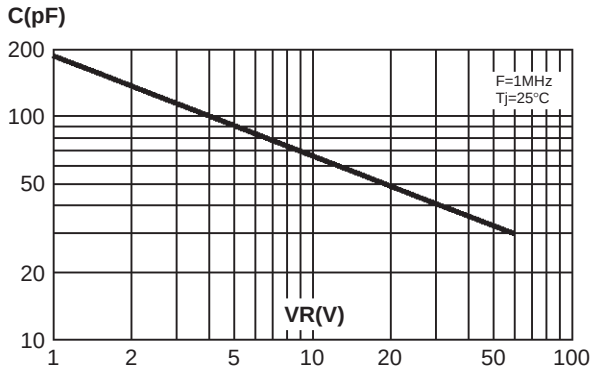


**Fig. 7:** Forward voltage drop versus forward current (maximum values).

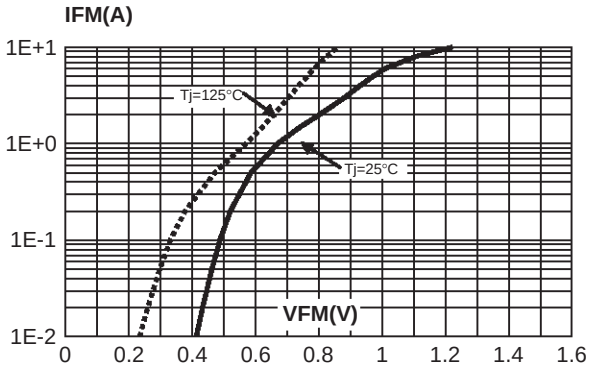



**Fig. 8-1:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm)(SMB).

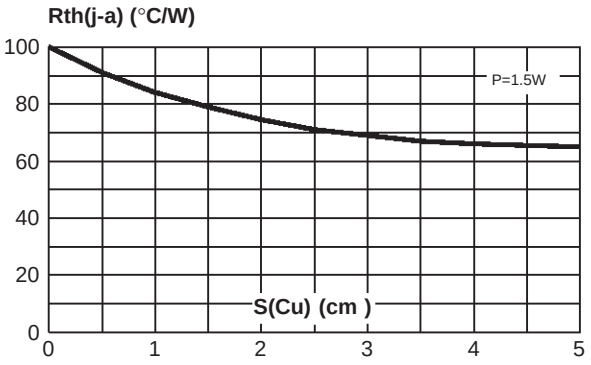
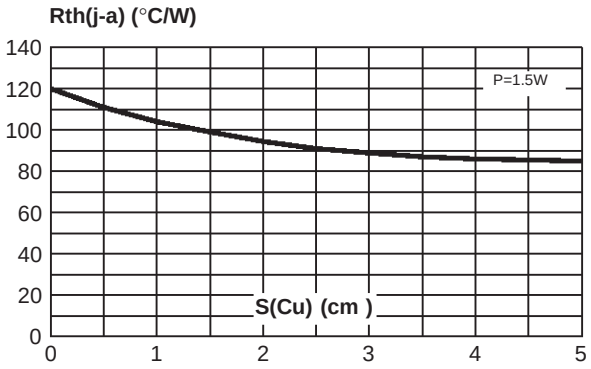
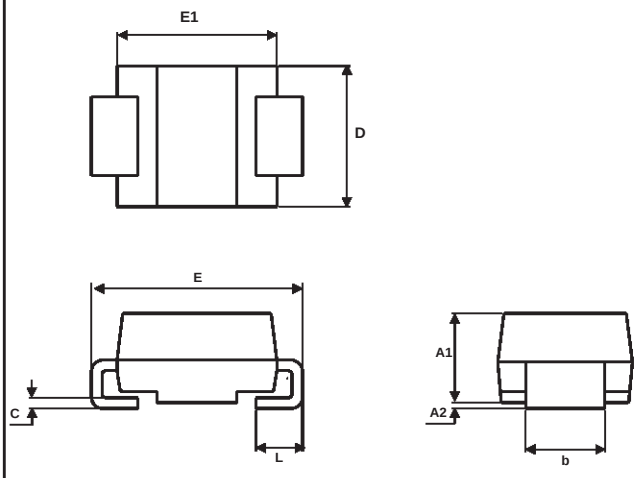



**Fig. 8-2:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm)(SMA).

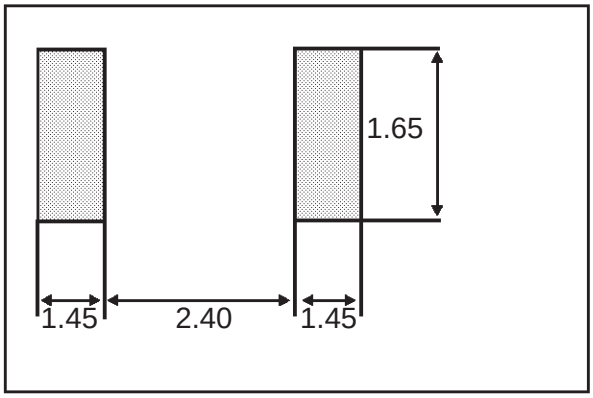


**PACKAGE MECHANICAL DATA**
SMA




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.70 | 0.075 | 0.106 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.25 | 1.65 | 0.049 | 0.065 |
| c | 0.15 | 0.41 | 0.006 | 0.016 |
| E | 4.80 | 5.60 | 0.189 | 0.220 |
| E1 | 3.95 | 4.60 | 0.156 | 0.181 |
| D | 2.25 | 2.95 | 0.089 | 0.116 |
| L | 0.75 | 1.60 | 0.030 | 0.063 |

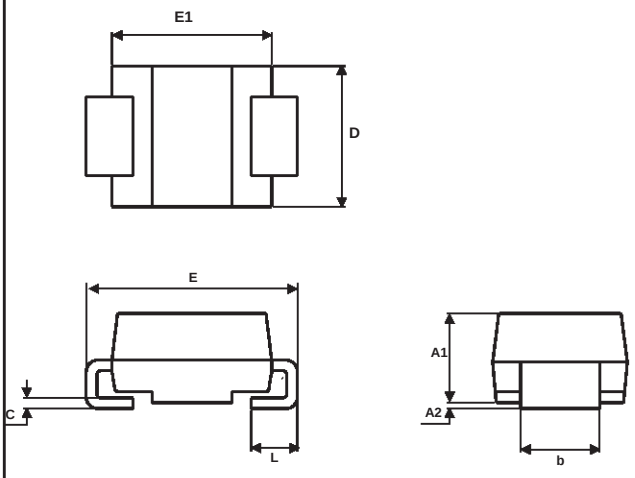
**FOOT PRINT DIMENSIONS** ( in millimeters)




■ **Marking:** S160

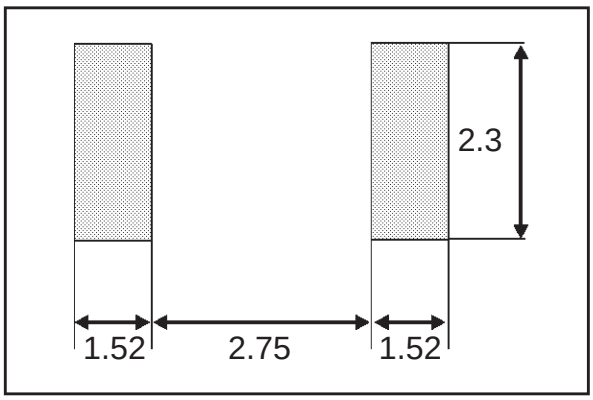
## PACKAGE MECHANICAL DATA

SMB




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.096 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.95 | 2.20 | 0.077 | 0.087 |
| c | 0.15 | 0.41 | 0.006 | 0.016 |
| E | 5.10 | 5.60 | 0.201 | 0.220 |
| E1 | 4.05 | 4.60 | 0.159 | 0.181 |
| D | 3.30 | 3.95 | 0.130 | 0.156 |
| L | 0.75 | 1.60 | 0.030 | 0.063 |

**FOOT PRINT DIMENSIONS** ( in millimeters)




■ **Marking:** E16

Cathode band indicated cathode